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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER SINGH, RAMNANDAN P	
			ART UNIT 2646	PAPER NUMBER

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/862,948

Applicant(s)

LEVY, DAVID H.

Examiner

Ramnandan Singh

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2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-85 and 91-94 is/are pending in the application.
- 4a) Of the above claim(s) 1-20,30-33,40-54 and 85 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 76-79 is/are allowed.
- 6) ☒ Claim(s) 21-29,34-39,55-75,80-84 and 91-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date (i) Aug. 29, 2001, (ii) Aug. 26, 2002, (iii) Sep. 16, 2002, (iv) Mar. 13, 2002, (v) May 18, 2005
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Group I: Claims 1-15, 19-20, 30-33, 44-54, 85-90, drawn to a compact keypad system and method, classified in class 379, subclass 368, as shown in Figs. 23, 35, 36, 40.

Group II: Claims 16-18, 21-29, 34-39, 40-43, 55-84, drawn to compact keypad structure, classified in class 341, subclass 22, as shown in Figs. 1-22.

2. The inventions are distinct, each from the other because Group I is drawn to a telephone keypad; and Group II is directed to a generic compact keypad structure.
3. Inventions claimed in Groups I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Groups I and II are distinct inventions. The subcombination has separate utility as shown above.

4. Applicant is required under 35 U.S.C. 121 to elect a single disclosed invention from Groups I and II for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there is no generic claim.

5. Species in a Group:

Species of Group I:

Species I: Claims 30-33 are directed to independent key regions and
combination key regions, as shown in Fig. 40.

Species II: Claims 44-54 are directed to translating alpha key inputs into
numeric outputs, as shown in Fig. 36.

Species III: Claims 85-90 are directed to interpreting key inputs, as shown in
Fig. 35.

Species of Group II:

Species IV: Claims 21-29 are directed to tactile features, classified in class
341, subclass 27.

Species V: Claims 16-18, 40-43 are directed to a cover of a keypad, classified
in class 341, subclass 22.

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6. Species I, II and III of Group- I are related as subcombinations disclosed as usable together in a single combination. Similarly, species IV and V of Group II are also related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, Species I relates to a keypad having an exposed, continuous surface defining both independent key regions and combination key regions wherein a grid of sense elements underlying the surface of the keypad and responsive to motion of a human finger across the surface of the keypad; Species II deals with a keypad defining alpha key regions corresponding to individual letters for translating alpha key inputs into numeric outputs; Species III deals with a method of interpreting keypad input by sensing keypad input corresponding to a combined actuation of a plurality of independent key regions of the keypad; Species IV relates to a touch-sensitive input device wherein the exposed surface varies in elevation across its planar area to form a series of tactile features.; and Species V deals with a cover of a keypad having an exposed, continuous surface defining key regions. Since these species are separately usable, the subcombinations are distinct from each other. See MPEP § 806.05(d).

7. Applicant is further required under 35 U.S.C. 121 to elect a single disclosed species from Species I, II and III of Group I for prosecution on the merits to which the claims shall be restricted if Group I is chosen or to elect a single disclosed species from

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species IV and V of Group II for prosecution on the merits to which the claims shall be restricted if Group II is chosen.

8. Applicant's response filed on Aug. 05, 2005 confirmed the election of Group-II along with Species IV containing claims 21-29, 34-39 and 55-84. Claims 86-90 are cancelled. As a result, claims 1-15, 16-18, 19-20, 30-33, 40-43, 44-54 and 85 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Hence this restriction is made FINAL.

9. **Status of Claims**

Claims 86-90 are cancelled.

Claims 55-84 are amended.

New claims 91-94 are added.

Claims 1-15, 16-18, 19-20, 30-33, 40-43, 44-54 and 85 are withdrawn.

Claims 21-29, 34-39, 55-84 and 91-94 are pending.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 21-22, 24-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Paratore et al [US 6,259,044 B1].

Regarding claim 21, Paratore et al teach a touch-sensitive input device (10) shown in Fig. 1, comprising:

an exposed, continuous surface defining a planar area (24) [col. 3, lines 19-27];

and

a grid of sense elements (20) coextensive with the area of the exposed surface and responsive to engagement of the exposed surface by an operator to establish a position of the engagement on the exposed surface [col. 1, line 57 to col. 2, line 24; Figs. 1-5; col. 2, line 57 to col. 5, line 35; col. 7, lines 9-29; col. 8, lines 30-47] ;

wherein the exposed surface varies in elevation across its planar area, as shown in Fig. 2, to form a series of tactile features [Figs. 2, 5; col. 2, lines 18-24; col. 3, lines 19-27; col. 5, lines 8-25; col. 9, lines 1-6].

Regarding claim 22, Paratore et al further teach the input device, wherein the tactile features comprise elevated nubs (i.e. cover members 48) [Figs. 2, 5; col. 5, lines 8-25; col. 5, lines 56-64].

Regarding claim 24, Paratore et al further teach the input device, wherein the surface carries legends (i.e. tactile indicators) associated with the tactile features [Figs. 1, 3; col. 2, lines 6-10; col. 3, lines 8-42; col. 4, lines 51-59; col. 5, lines 36-45].

Regarding claim 25, Paratore et al further teach the input device, wherein the tactile features define distinct regions of the surface corresponding with associated alphanumeric characters (i.e. letters, numbers, or other symbols) [col. 3, lines 8-12].

Regarding claim 26, Paratore et al further teach the input device configured to output a sequence of alphanumeric characters as corresponding tactile features of the surface are engaged sequentially [col. 2, lines 3-10].

Regarding claim 27, Paratore et al further teach the input device comprising an IACK keypad (i.e. keypad-overlays having independent and combinable keys) [Figs. 1-2; col. 6, lines 60-67].

Regarding claims 28-29, the limitations are shown above.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paratore et al as applied to claim 22 above.

Regarding claim 23, although Paratore et al teach the input device having elevated nubs (i.e. cover members 48) [Figs. 2, 5; col. 5, lines 8-25; col. 5, lines 56-64], it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any dimensions for the elevated nubs for the input device in order to accommodate the tactile features subject to circuit, system and design constraints.

14. Claims 34-39, 55-75, 80-84 and 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philipp [US 6,535,200 B2] in view of Paratore et al [US 6,259,044 B1].

Regarding claim 34, Philipp teaches an electronic device for capacitive position sensing, as shown in Fig. 1, comprising:

a substrate (44) carrying a first array of spaced apart, conductive trace elements [Fig. 4; col. 10, lines 22-36];

carrying a second array of spaced apart, conductive trace elements, the first and second arrays together forming a coordinate system [col. 8, lines 23-47];

the first and second arrays of trace elements forming a capacitive grid responsive to presence of a digit of an operator on the surface of the cover [col. 6, line 50 to col. 7, line 8]; and

an electronic circuit adapted to sense a capacitive state of the grid and to determine a position of the digit upon the sensed capacitive state [Figs. 3, 7-8, 10 ; col. 11, lines 31-65; col. 12, lines 18-56; col. 15, lines 5-22; Abstract].

Philipp does not teach expressly using a flexible cover disposed above the substrate.

Paratore et al teach a flexible cover (26) disposed above the substrate which is also separated from the substrate by an array of resilient, collapsible elements and having an exposed, continuous surface [Fig. 2; col. 2, lines 11-24; col. 3, line 18 to col. 4, line 27].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the flexible cover of Paratore et al with Philipp in order to prevent a touch-sensitive screen from damage due to excessive pressure when the operator presses the key [Paratore et al; col. 1, lines 51-55].

Claim 55 is essentially similar to claim 34 except for tactile feedback. Paratore et al further teach the input device providing tactile feedback to an operator [col. 1, lines 43-54; col. 2, lines 11-24; col. 5, lines 8-24].

Claims 71 and 80 are essentially similar to claim 55 and are rejected for the reasons stated above.

Regarding claim 35, the combination of Philipp and Paratore et al further teaches the electronic device, wherein the continuous surface defines key regions of a keypad [Paratore et al; Figs. 1, 2; col. 3, lines 19-58] ; and

wherein the electronic circuit interprets an intended keypad input based at least in part upon the sensed capacitive state [Philipp; Fig. 7].

Regarding claim 38, Paratore et al further teach the electronic device in the form of an IACK keypad, with the exposed cover surface defining both independent key regions and combination key regions (i.e. keypad-overlays having independent and combinable keys) [Figs. 1-2; col. 6, lines 60-67].

Regarding claim 36, although Philipp teaches the electronic device having the capacitive grid [col. 6, line 50 to col. 7, line 8; col. 10, lines 22-26], it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a

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position of local deflection of the cover toward the substrate in order to accommodate the response of the capacitive grid subject to circuit, system and design constraints.

Claims 37, 39, 91-94 are essentially similar to claim 36 and are rejected for the reasons stated above.

Regarding claims 56 and 57, although Paratore et al teach a resilient, collapsible, convex "snap dome" [Fig. 2; col. 3, lines 43-58; col. 4, lines 3-27; col. 5, lines 8-35], it would have been obvious to one of ordinary skill in the art at the time the invention was made to locate snap elements under or adjacent elevated (i.e. raised) key regions and non-elevated key regions in order to accommodate tactile feedback of the keypad operation subject to circuit, system and design constraints.

Claims 58, 59-70, 72-75, 81-84 are essentially similar to claims 56 and 57, and are rejected for the reasons stated above.

Allowable Subject Matter

15. Claims 76-79 are allowable.

16. The following is a statement of reasons for the indication of allowable subject matter:

Claim 76 recites a keypad comprising a substantially planar substrate carrying an array of sense elements arranged to change state in response to keypad operation; a flexible cover disposed above the substrate and having an exposed surface defining an array of key regions arranged in rows; the key regions comprising alternating rows of elevated and on-elevated key regions, with at least some non-elevated key regions disposed between four adjacent elevated key regions; and at least one continuous, elongated snap element extending adjacent at least three key regions of one row of key regions, between the cover and the substrate and spacing the cover from the substrate, the snap element adapted to resiliently collapse as a non-linear response to local pressure against the exposed cover surface to provide tactile feedback of keypad operation. As such, claim 76 requires the key regions comprising alternating rows of elevated and on-elevated key regions, with at least some non-elevated key regions disposed between four adjacent elevated key regions which is not found in prior art. Therefore, claim 76 is allowable.

Claims 77-79 are allowable due to dependence from claim 76.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gerpheide [US 6,473,069 B1] teach an apparatus and method for tactile feedback from an input device [Whole document].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
Art Unit 2646



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SUPERVISORY PATENT EXAMINER